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Title: AMPR/SSMI Data Comparisons

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Significant Accomplishments for the Past Year:

The AMPR was flown for the first time with successful data collection over precipitation targets in Florida and off the Oregon coast. The AMPR met its expected performance levels, with very low noise (0.2 to 0.4°C) and relatively troublefree operation. Numerous rain cloud systems over land and ocean were overflown and the measurements at 10.7, 19.35, 37.1, and 85.5 GHz reveal a wide variety of microphysical conditions which exist within raincloud systems. Although predicted by radiative transfer model calculations from cloud model simulations, this diversity has not been observed before due to the poor spatial resolution of spaceborne microwave radiometers. Saturation of the 19.35 GHz rain emission signal was frequently observed in the oceanic rain systems, supporting the desirability of a 10 GHz channel on the TRMM microwave radiometer for sensitivity to the higher rain rates.

Focus of Current Research and Plans for Next Year:

The AMPR will have several modifications, including additional (orthogonal polarization) channels at 19.35 and 37.1 GHz, and the warm calibration target will be replaced with a much more thermally conductive design. The AMPR will be flown in CAPE in the summer of 1991 where the first research quality radar data will also be collected for comparison to the AMPR data.

Publications:

Galliano, J.A., and R.H. Platt, 1990: Advanced Microwave Precipitation Radiometer (AMPR) for Remote Observation of Precipitation. Final Report, NASA Contract NAS8-37142.